IceBridge DMS Data Collection and Processing

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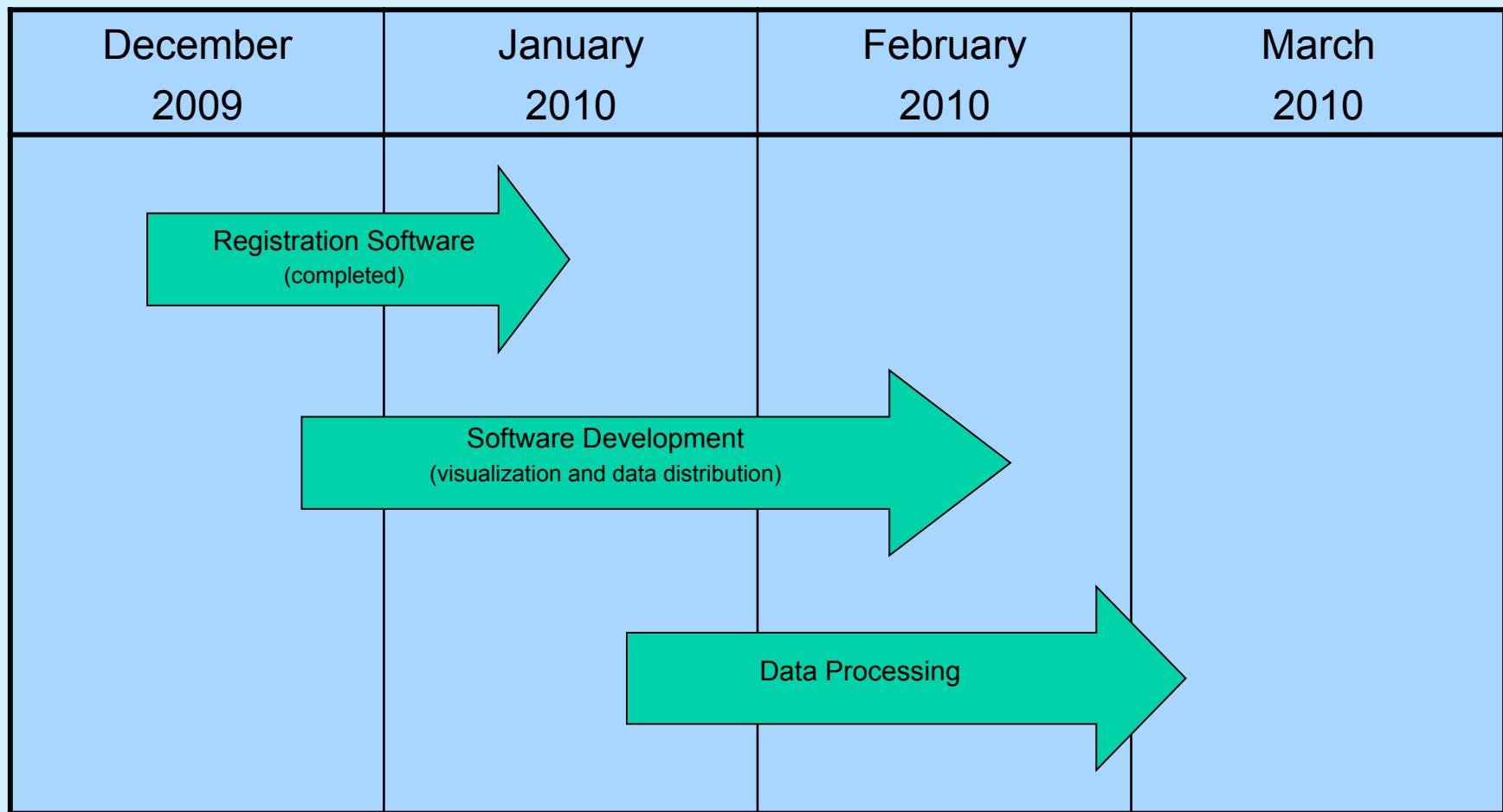**NASA Ames UARC**
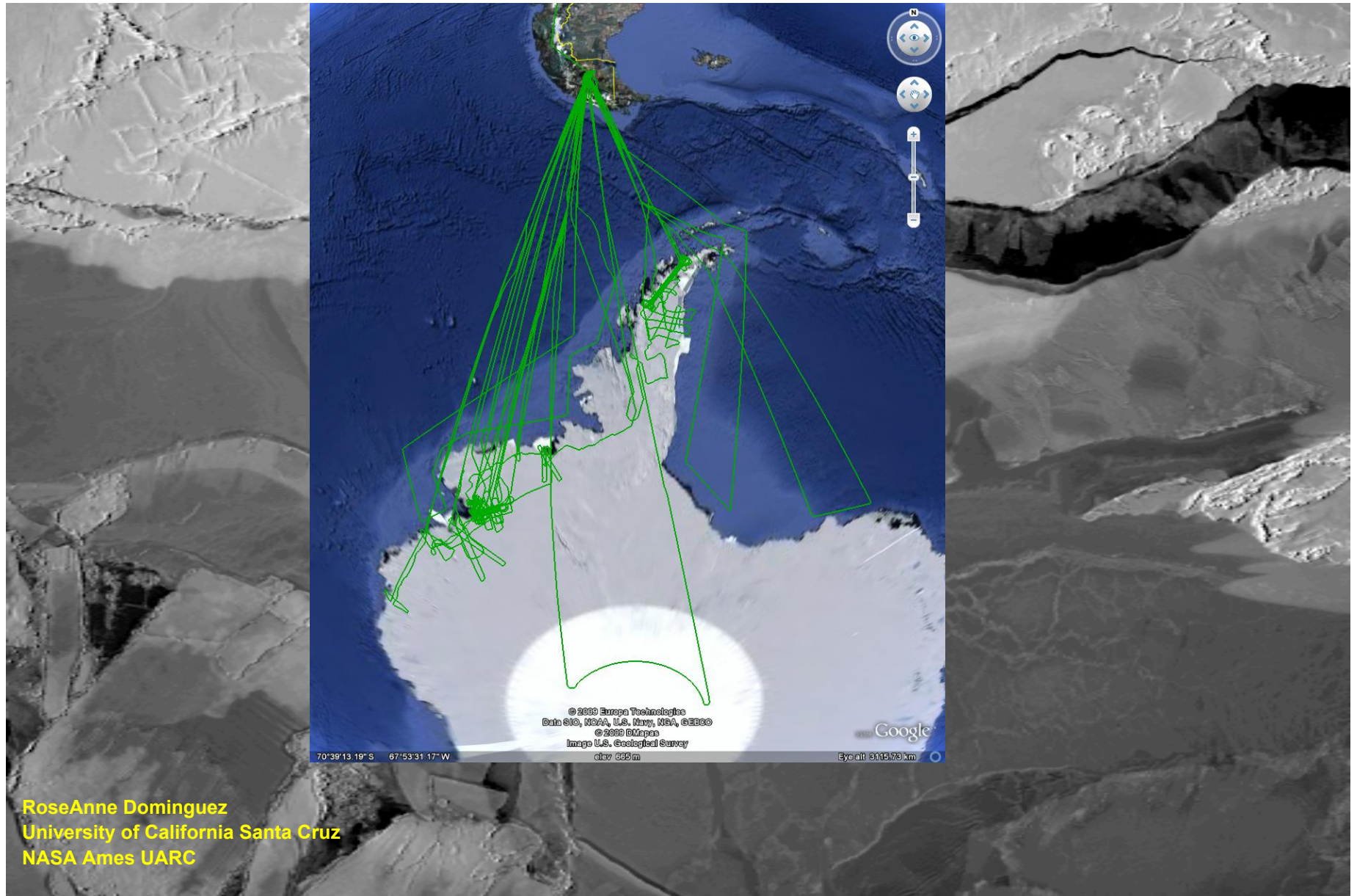
OIB DMS Data Processing Status

- Airborne Science Program Facility Instrument *(as of 2010)*
- 21 megapixel camera, 28mm lens

- 1.966 TB data collected (229,000 frames)
- 2m resolution @ 34,000' (5.0 sec frame interval)
- 10cm resolution @ 1600' (0.3 to1.3 sec frame interval)
- 12,720 frames processed to date (5%)

- Processed format JPG/JGW *Note: NOT USGS-quality*
- Projection: Geographic Lat/Long (WGS84 Datum)
- 3-D ray trace software completed
- Full bore-sight correction to be implemented

- Archive plan: NASA ARC + NSIDC servers (TBD); Google Earth visualization tool; web download interface (SGGATE-ARC)

DMS Processing Timeline

December 2009	January 2010	February 2010	March 2010

Registration Software (completed)

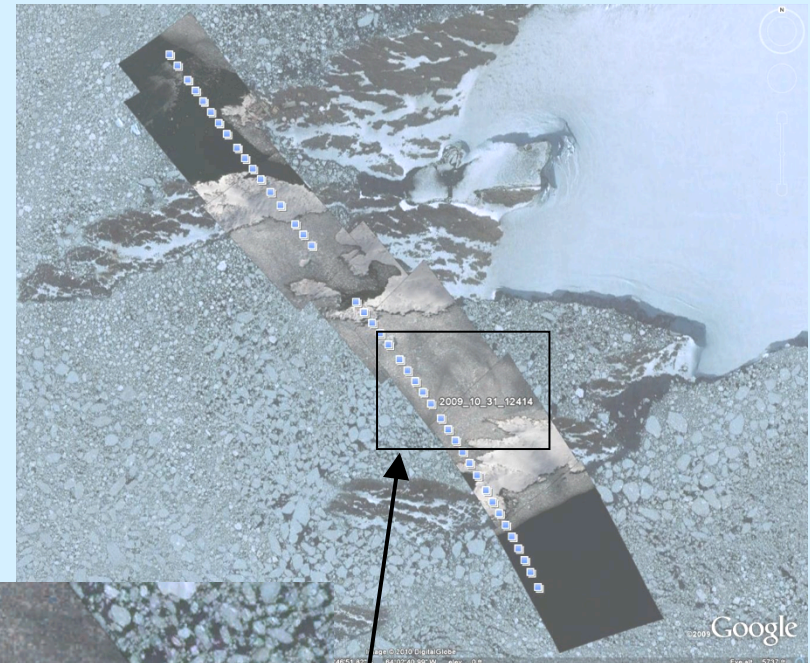Software Development (visualization and data distribution)

Data Processing

DMS Visualization

Google Earth Visualization

- Aircraft Flight Track
- Frame ID
- Frame Reference Data
- Thumbnail image display

Web based Data Distribution

- Access to geo-registered or raw data (if desired)
- Query options
  - Date / time
  - Location
  - Map Interface
  - Frame ID

Frame ID: 2009_10_31_12414;
Photo Date: Oct 31 2009;
GPS Time: 19:09:16.25;
Aircraft Roll: -16.322 deg;
Aircraft Pitch: -1.210 deg;
Aircraft Heading: 324.15 deg;
Aircraft Altitude: 306 m.

2009_10_31_12414

Punta Arenas Airport

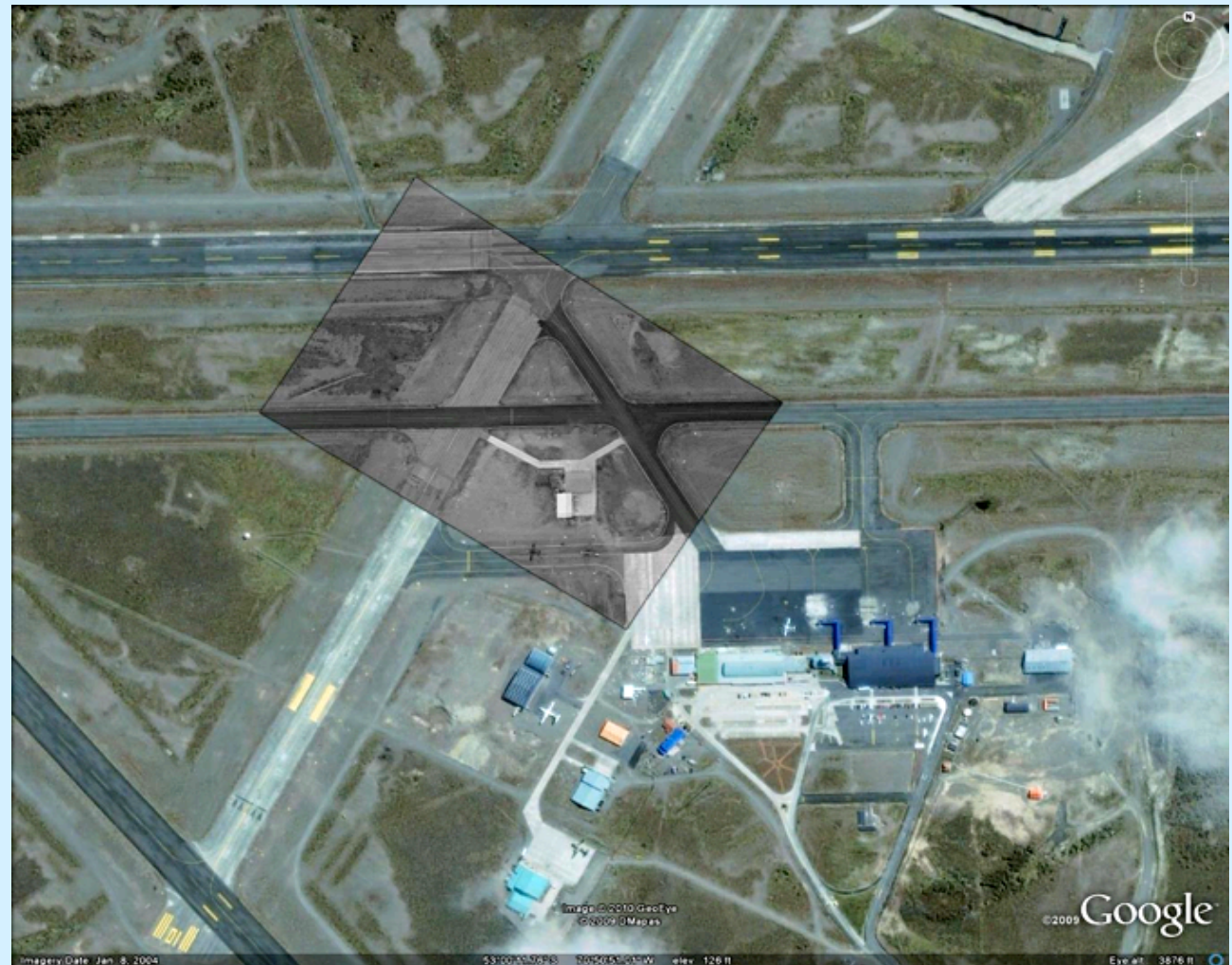## Preliminary Error Analysis

X   -5.7m* *Δ vs GE*

Y   9.0m*

Note(s):
- Boresight not implemented
- Low resolution DEM
- *Lever Arm measurement error

Accuracy Goal (1500' / 35000')
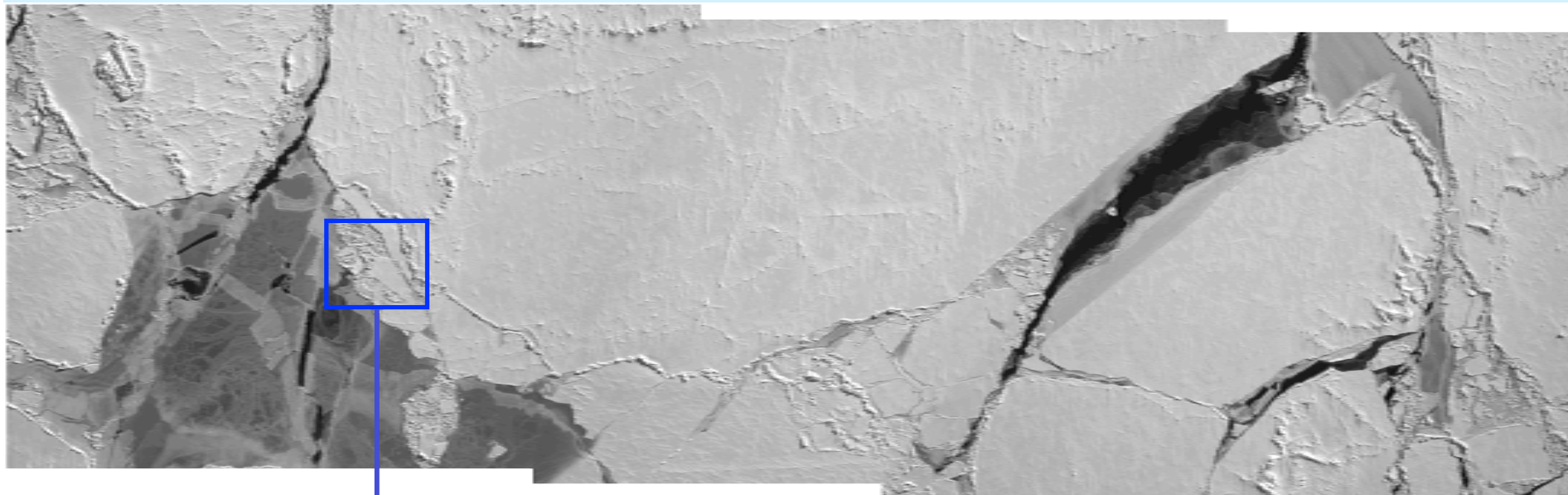
X-Y   0.5m / 5m

Dependent on DEM resolution, bore-sight quality and IMU capability

Weddell Sea Ice Mosaic

DMS Three Frame Mosaic

30 October 2009

Full Resolution